THE AMERICAN
JOURNAL OF PHARMACY

OCTOBER, 1908

SOME OF THE DISTINGUISHING MORPHOLOGICAL CHARACTERS OF BELLADONNA AND SCOPOLIA.*

By Henry Kraemer.

Atropa Belladonna and *Scopolia carniolica* are both members of the *Solanaceæ* and stand in close relationship. The former belongs to the *Solaneæ-Lyciinæ*, or group of plants characterized by tubular corollas and berry-like fruits, and the latter to the *Solaneæ-Hyoscyaminæ*, or plants with funnel-shaped corolla and transversely dehiscent capsular fruits. To this latter sub-group also belongs the genus Hyoscyamus, and botanically Scopolia appears to be more closely allied to Hyoscyamus than to Belladonna.

According to v. Wettstein,[1] *Atropa Belladonna* is found throughout Europe, extending to the Caucasus Mountains and Persia. The plant is also cultivated in Europe, and in some localities in the United States. The leaves and flowering tops are official in probably all of the pharmacopœias, while the roots are official in only some of these standard authorities. Both the roots and herb have been carefully investigated microscopically [2] and chemically, but the subject can not be considered to be exhausted, particularly in view of the necessity of differentiating them from other drugs which are mixed with, or substituted for, them.

While *Scopolia corniolica* was described by the earlier botanists and while it has been used medicinally for many years, it is only

* Read before the Scientific Section of the American Pharmaceutical Association, September, 1908.

recently that the drug has come into prominence, the rhizome and roots now being official in the U. S. Pharmacopœia. The habitat of the plant, according to v. Wettstein,[1] includes the region of the Eastern Alps, the Carpathian Mountains, and the adjoining country, the plant therefore being much more limited in its range than that of *Atropa Belladonna*. The natural history of the drugs derived from *Scopolia carniolica* has been given by Holmes,[3] Maisch[4] and Nevinny.[5] Greenish[6] has compared the histological characters of the rhizome of *Scopolia carniolica* with those of the root of *Atropa Belladonna*, and Moeller[7] has made a comparative study of the leaves of these two plants.

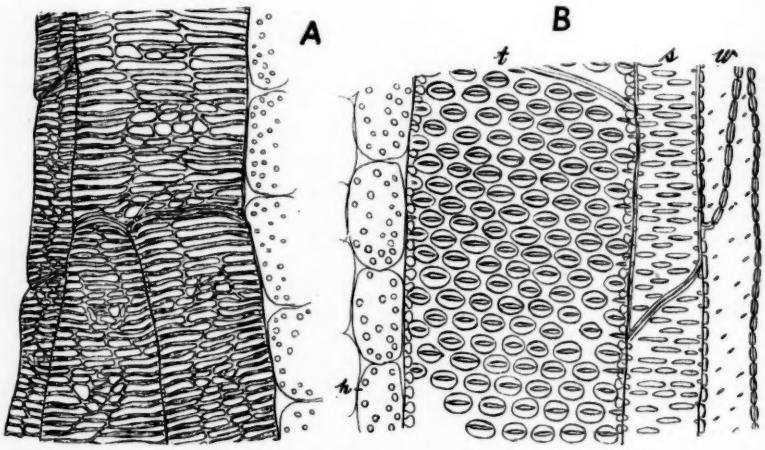

FIG. 1. *A*, longitudinal section of portion of rhizome of *Scopolia carniolica* showing reticulate tracheæ; *B*, longitudinal section of portion of the root of *Atropa Belladonna* showing wood fibers (*w*) with simple, oblique pores, tracheæ (*s*) with simple pores, tracheæ (*t*) with bordered pores, and parenchyma cells (*p*) containing starch.

Having occasion the past summer to examine belladonna roots and herb, and scopolia rhizome, roots and herb, and owing to the need of more definite comparative information for identifying and differentiating these drugs in both the crude and powdered condition by reason of their frequent admixture, it seemed to me to be desirable to present my results at this time.

Belladonna Root.—The following tissues and elements are found in belladonna root: Parenchyma containing starch and cryptocrystalline crystals of calcium oxalate, which is by far the most abundant tissue present; tracheæ, or ducts; wood fibers; cork, and occasionally bast fibers. The starch grains are single or 2- to 3-

compound, from 5 to 25 μ in diameter, and vary from spherical to ellipsoidal or ovoid, frequently having a cleft at the point of origin of growth. The crystals of calcium oxalate are deltoid or

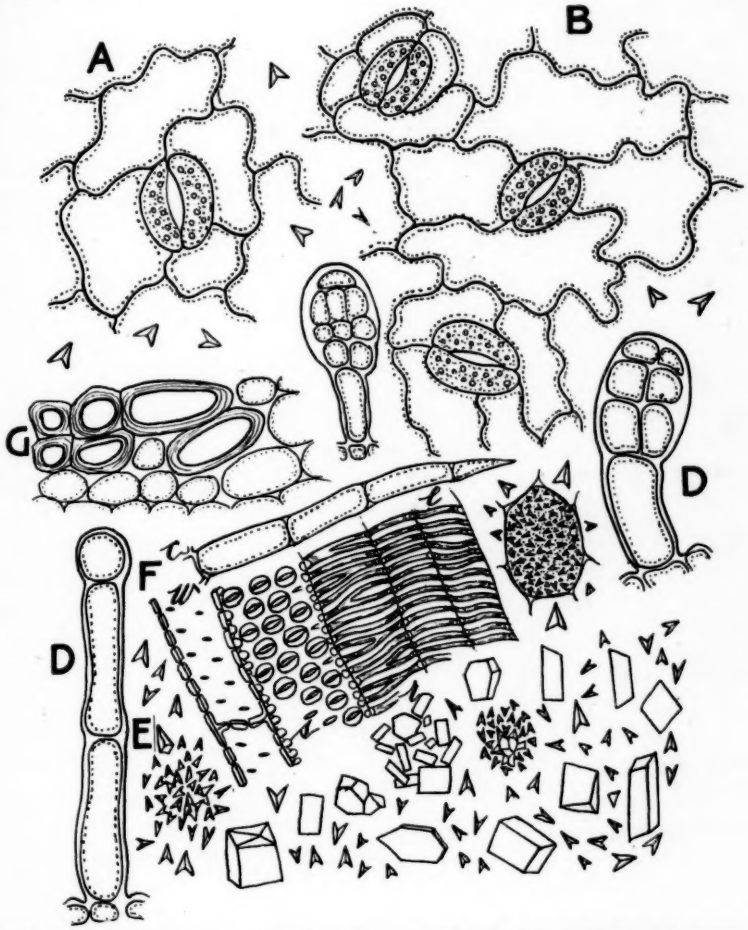

FIG. 2. Belladonna Herb: *A*, section of upper epidermis of leaf showing one stoma; *B*, section of under epidermis of leaf showing three stomata; *c*, 4-celled non-glandular hair; *D*, glandular hairs; *E*, cryptocrystalline crystals of calcium oxalate; *F*, longitudinal section of portion of stem showing wood fibers (*w*), tracheæ (*s*) with bordered pores, tracheæ (*r*) with reticulate markings, tracheæ (*l*) with annular and spiral markings; *G*, transverse section of portion of stem showing six bast fibers and a few parenchyma cells.

arrow-shaped, and vary from 4 to 15 μ in diameter. They are packed in the cells in which they occur, and are readily distinguished in the powdered drug by means of the micro-polariscope.

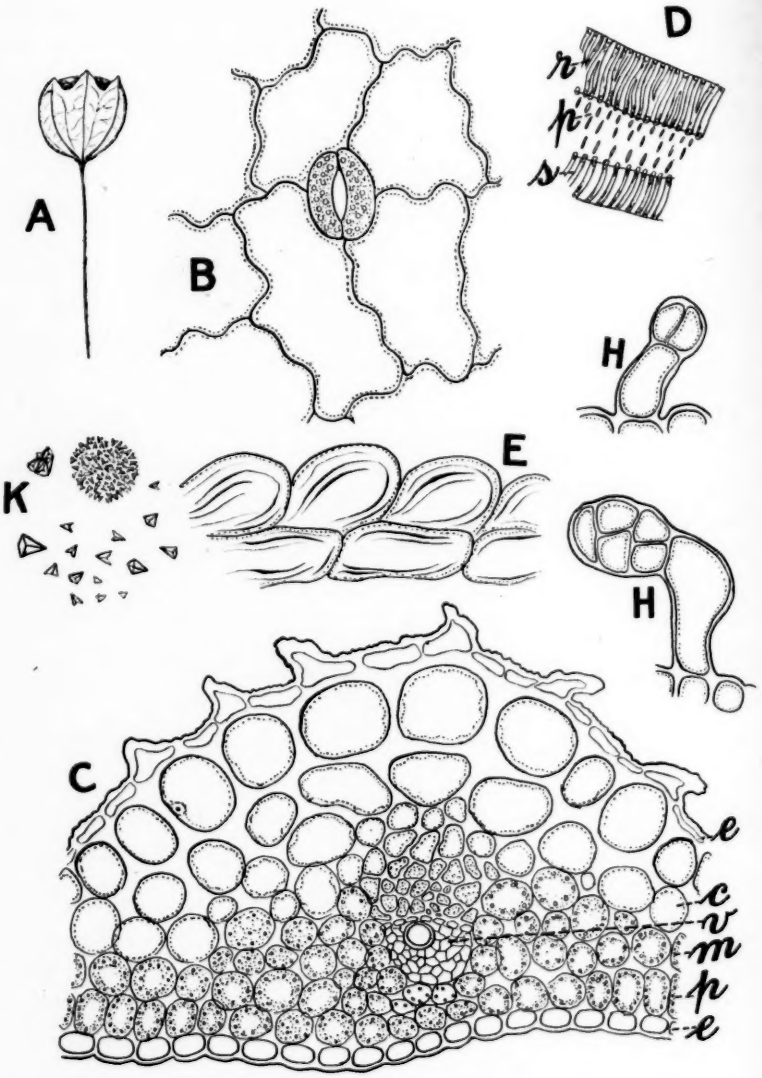

FIG. 3. Scopolia Herb: *A*, pyxis about natural size; *B*, surface section of lower epidermis of leaf; *C*, transverse section of leaf through a vein showing irregular epidermal cells of lower surface (*e*), collenchymatous cells (*c*), fibrovascular bundle (*v*), loose parenchyma (*m*), palisade cells (*p*) and upper epidermis (*e*); *D*, portion of fibrovascular bundle of stem showing tracheæ with reticulate markings (*r*), tracheæ with simple pores (*p*), and tracheæ with annular markings (*s*); *E*, epidermal cells of lower surface of leaf having foldings due to the irregularity of the outer walls; *H*, glandular hairs, which are occasionally found; *K*, cryptocrystalline crystals of calcium oxalate.

The tracheæ are strongly lignified, and are of two kinds,—those with simple pores and those with bordered pores. The tracheæ with the simple pores are the ones that have been most frequently described. The pores are slit-like and are from 10 to 17 μ long, being usually transverse. The tracheæ with bordered pores (Fig. 1, *B*) have not been heretofore described. They vary from 50 to 90 μ in width. In radial-longitudinal section the bordered pores are elliptical or circular in outline, and vary from 5 to 8.5 μ in diameter. The pore itself is narrow, bi-convex, and transverse to the long diameter of the border. With phloroglucin and hydrochloric acid, or chloral solution the wall swells to such an extent as to obscure the border. The wood fibers are lignified and have simple oblique pores, but pass into tracheids having bordered pores. The cork cells are similar to those usually found in plants, the younger ones being sometimes somewhat lignified.

Scopolia Rhizome and Roots.—Practically the same tissues are present in scopolia rhizome and roots as are found in belladonna root except wood and bast fibers. The starch grains are mostly spherical and on an average smaller than those in belladonna root, being from 3 to 13 μ in diameter. Cryptocrystalline crystals of calcium oxalate are present and resemble those found in belladonna root, but are more elongated or pyramid-like, and occasionally form aggregates, which latter are about 15 μ in diameter. The tracheæ vary from 25 to 100 μ in diameter, and are especially characterized by having reticulate markings. Tracheæ having simple, slit-like pores from 10 to 40 μ long, are also present. Both kinds of tracheæ are lignified.

Belladonna Herb.—This drug has three principal distinguishing characteristics: (*a*) The calyx lobes are rather long and spreading, exposing the berry; (*b*) the hairs on the leaves, while not numerous, are of relatively frequent occurrence (Fig. 2, *c*, *D*); (*c*) some of the tracheæ have bordered pores (Fig. 2, *F*). In addition to the small cryptocrystalline crystals of calcium oxalate abundant in some of the cells, there are present in some of the cells of the petiole and stem polygonal crystals (Fig. 2) which are anisotropic and vary from 6 to 15 μ in diameter, and in still other cells narrow prisms which are in spherite aggregates resembling those of some of the carbohydrates. Besides the tracheæ with bordered pores there also occur in the stem tracheæ with annular, spiral and reticulate markings, and wood fibers and bast fibers. The elements of the

fibrovascular bundles are more or less lignified. The bast fibers are nearly a millimeter long; the ends are pointed; and the walls on one side are usually undulate and about 6 μ thick.

Scopolia Herb.—The calyx lobes are relatively short, and the capsular fruit (pyxis) is almost completely enclosed by the calyx tube (Fig. 3, *A*). A very few glandular hairs with a 1- or 2-celled stalk and 2- to 6-celled head may with difficulty be found (Fig. 3, *H*). In addition to tracheæ with annular and spiral markings, and simple pores there are in the stem tracheæ with reticulate markings, but those with bordered pores do not occur. The crystals of calcium oxalate are of the cryptocrystalline character of those found in belladonna. In glycerin preparations spherite aggregates resembling those of carbohydrates are present, especially in the calyx. Acicular crystals sometimes separate in chloral preparations, but as they are isotropic they are not those of calcium oxalate. The epidermis of the leaves, particularly that of the under surface, is very irregular, giving a tuberculate appearance on transverse section (Fig. 3, *C*), and in surface view frequently has the appearance of folds (Fig. 3, *E*). As in the rhizome, bast fibers and wood fibers are apparently not present. There is however a strongly developed layer of collenchymatous cells in the stem, the thickenings being more uniform and more marked than those in the collenchymatous cells of belladonna.

Literature Cited.

[1] R .v. Wettstein: Engler and Prantl's Pflanzenfamilien.
[2] Tschirch and Oesterle's Anatomischer Atlas; Vogl's Pharmakognosie; Moeller's Pharmakognostischer Atlas; Kraemer's Botany and Pharmacognosy (3rd edition).
[3] E. M. Holmes: *Pharmaceutical Journal and Transactions*, **20** (1889), p. 468.
[4] John M. Maisch: *American Journal of Pharmacy*, **62** (1890), p. 107.
[5] Joseph Nevinny: *Pharmaceutische Post*, **27** (1894), p. 333.
[6] Thomas Greenish: *Pharmaceutical Journal and Transactions*, **20** (1889), p. 471.
[7] Citation by Maisch from Moeller's Pharmakognosie, *loc. cit.*

NATIONAL FORMULARY.*

Your committee on National Formulary begs leave to report that the consideration of the enlargement and systematic organization of the Committee began in December of last year, and in March of this year ten auxiliary members were nominated and then were appointed by the Council, and the whole membership was divided into five sub-committees as has been duly described in the *Bulletin*.

The Chairman has collected all the criticisms that have been published and has sent them with other matter to the members of the Committee in ten circular letters covering thirty to forty typewritten pages, copies of which are submitted herewith. This matter and the criticisms have had the careful consideration of all the members during the intervening time. The advisability of holding a meeting of the Committee in June was discussed, but it was finally decided to recommend to the Council that a meeting be held at this place prior to the annual meeting of the Association, the Council duly authorizing the holding of this meeting. The proceedings and recommendations of this meeting are as follows:

In accordance with the action of the Council, the National Formulary Committee assembled at Hot Springs, Arkansas, on Sept. 3, 1908. Nine sessions have been held involving about twenty-three hours of executive work, two sessions being held on Thursday, three on Friday, three on Saturday, and one on Monday.

Thirteen of the fifteen members are present, viz.: Messrs. Diehl, Hallberg, Hynson, Stephens, La Wall, Arny, Beringer, Dunning, Eliel, England, Scoville, Seltzer and Wilbert. The two absent members, Messrs. Cook and Hall, were unable to make arrangements to attend in the brief time which elapsed between the announcement of the Council's action and the time for the meeting, and on this account their absence may be justly excused.

STATUS OF THE COMMITTEE.

The Chairman suggested that the appointment of this Committee be made by the Council, which is composed of members who have been familiar with the duties required and the personality of the various committees rather than by an executive officer who may

* Report presented by the Committee on National Formulary at the meeting of the American Pharmaceutical Association, September, 1908.

or may not be cognizant of the fitness of his appointee for carrying out the specific duties required of them.

In accordance with this suggestion the Committee unanimously recommend to the Association that the Committee on National Formulary be appointed by the Council and that it shall continue until the revision of the Formulary for which it was appointed is completed. It is further recommended that the Committee to be appointed by the Council shall consist of fifteen members.

ORGANIZATION OF THE COMMITTEE.

For the present meeting, the auxiliary members of the Committee were placed on an equal footing so far as official action and voting is concerned, with the members of this Committee appointed by the President.

A Secretary *pro tem.* was appointed, but the committee did not deem it advisable to further change the present organization into sub-committees, etc. until after the above recommendation providing for a more permanent committee has been acted upon by the Association. The work is therefore being conducted under the form of organization with which the Association is familiar. It was deemed advisable, however, to secure the future co-operation and advice of the Medical profession and of the Medical departments of the National Government, and we recommend that the American Pharmaceutical Association, through its properly constituted officers, request the Chief of the Bureau of Chemistry, the Surgeon General of the Army, the Surgeon General of the Navy and the Surgeon General of the Public Health and Marine Hospital Service to co-operate in the work of revision by supplying such suggestions for additions, corrections or eliminations, as may be brought to their attention through or by the physicians and pharmacists engaged in these several services; and that the Chief of the Bureau of Chemistry of the Agricultural Department and the Surgeon General of the Public Health and Marine Hospital Service, be requested to assist in such laboratory work as may be necessary to improve and perfect the National Formulary and in providing such tests of identity and purity as may be necessary. We suggest that the interest and co-operation of the medical profession in this work may be best secured through the Joint Conference Committee proposed and provided for by the American Medical Association at the recent meeting of that Association in Chicago. We further

recommend that the members of this Conference Committee, to be appointed by the American Pharmaceutical Association, be selected from the membership of the Committee on National Formulary.

ERRATA VS. CRITICISMS.

The action of the Chairman in pointing out to certain Government officials that errors in the National Formulary should not be confounded with criticisms of formulas or titles, was indorsed by the Committee.

ANALYSIS OF CRITICISMS.

An analysis of criticisms made on the present Formulary by the Chairman is submitted in connection with this report.

SCOPE AND PURPOSE OF THE FORMULARY.

The scope and purpose of the Formulary is well presented in the preface to the first three editions; and we recommend that the Association continue this as its attitude in regard to the Formulary.

SHORTCOMINGS OF THE FORMULARY.

Touching the shortcomings, we recommend that conservative action is necessary in connection with the introduction of changes that the needs of all classes of pharmacists may be met, and that the question of what is or may be a medicinal preparation, or what may be obsolete or poly-pharmacal calls for liberal interpretation for the purposes of the Formulary.

ALTERNATIVE WEIGHTS AND MEASURES.

As was pointed out that owing to changes in policies on the subjects of weights and measures in successive editions of the National Formulary, much confusion in weights and measures occurred, and consequently a number of errors appear in this regard, due to the fact that the apothecaries quantities were changed into metrical and then subsequently reconverted into their original equivalents, a double liability of error being thus introduced.

After very careful consideration, the Committee recommends that the Metric system only of weights and measures be used in the National Formulary.

PERCENTAGES.

Owing to ambiguities in some statements of percentages in the National Formulary, we recommend that whenever it is desirable

to state the strength of a preparation, it be stated as containing so many grams of substance in one hundred cubic centimeters, except when all the parts are given by weight, when it may be expressed by per cent.

ALCOHOLIC PERCENTAGES.

The requirement of the National and State Pure Food and Drug Laws that the percentage of alcohol in medicinal preparations shall be definitely stated on the label has lead to the suggestions that the National Formulary add a table or other statement of the alcoholic strength of all the preparations containing alcohol.

This question being beset by a number of difficulties, a committee has been appointed to determine by experiments, whether such a statement in the National Formulary is feasible. If found feasible, the Committee will propably recommend that a statement of this character be incorporated, either under the separate preparations or in tables, as may be advisable. If it is not found feasible to state exact percentages, it may be advisable to state a theoretical strength, and to require simply that the alcoholic contents of preparations containing alcohol shall be within ten per cent. of this theoretical strength, and that slight differences in flavors and colors may be disregarded.

IDENTITY STANDARDS.

The criticism being made that the National Formulary contains a number of articles for which there is no recognized standard in the pharmacopœia or other authoritative works, and that in consequence, preparations containing such unofficial articles may vary considerably, owing to commercial variations in the articles sold under the same name. In order to correct this, two methods have been considered. One, to introduce into the Formulary such articles, with tests of identity and standard of strength, as is done in the Pharmacopœia, or for the present, to briefly define such articles in footnotes, and request the Pharmacopœial Committee to introduce such articles with tests of identity and strength of purity in the next edition of the Pharmacopœia. It is very probable that any such request would be complied with by the Pharmacopœial Committee. This Committee has deemed it wise to appoint a special sub-committee to collect that data on the number and character of such simples as are not recognized by authoritative publications before making definite recommendations on this subject.

ADJUVANT PREPARATIONS AND COLOR STANDARDS.

The suitability of some of the preparations which are largely used as vehicles or for flavoring or similar purposes in the Formulary has been questioned by different critics; among such questions are the advisability of using saccharin as a sweetening agent, the stability of some of the elixirs, the alcoholic strength of some of the elixirs, and the question of unformity in color or appearance of various preparations. These are questions needing experimental and any other evidence which may be available, and each has been treated separately and placed in the hands of a special committee. One committee has been charged with the duty of studying the coloring agents and their uses, and if practicable, to recommend some method of standardizing either the coloring agents themselves, or the color of the preparations in which they are used.

Another committee has been asked to devise basic elixirs of varying alcoholic strength which may be used in place of aromatic elixir or other bases when a low alcoholic content in the finished preparations is desirable. Such for instance as the bromide elixir.

The third committee will investigate and report upon the advisability of using saccharin in National Formulary preparations.

LIBERTIES TAKEN WITH FOREIGN PHARMACOPŒIAS.

The present Formulary has been criticised because of uncalled for liberties with the formulas of the British, German and French Pharmacopœias on the ground that a preparation which is intended to be dispensed as identical with or similar to the preparation official in one of these Pharmacopœias should not be changed in any way from the formula of that Pharmacopœia. The deviation in such formulas which have been made in past and present editions have been made for the reason that ingredients in such preparations vary in the different pharmacopœias and it is therefore often impracticable to make a foreign preparation with the American galenicals, and have it even similar to the original preparation. It is therefore necessary in many cases to entirely re-arrange the formula and thus produce a preparation which for all medicinal purposes will take the place of the original preparation, but which differs from it in some minor particulars. Your Committee thinks that such liberties are justifiable for the National Formulary, but does not mean by this that such preparations should be dispensed on foreign prescriptions

which call for the foreign preparations. We recommend that all formulas in the National Formulary be uniform in style, whether they originate here or are taken from foreign authorities.

ELIMINATIONS.

Regarding eliminations, the Committee agrees with the Chairman that the therapeutics or therapeutic incompatibilities of N. F. preparations are not within the province of the National Formulary Committee. The physician may be reasonably expected to know what he wants, and if he chooses to prescribe preparations which are therapeutically incompatible, it is the duty of the pharmacist to supply what is ordered. The Committee therefore feels that it is not justified in dismissing or rejecting any preparation simply because it is stated to be therapeutically absurd, but feels it to be our duty to supply formulas for medicaments which may be prescribed by physicians if the demand for these is sufficient to justify our attention, and if an acceptable formula can be devised or obtained. We think that some such statement should be placed in the preface to the next edition of the N. F. Individual pharmacists may point out the absurdity of some of the combinations and aim to discourage their use and demand, but the physician must decide what he wants, and if his therapeutics are at fault, it is not within the province of the National Formulary to officially criticise or correct them. Regarding detailed consideration of elimination from the Formulary, the Committee wished to act conservatively and the matter has been referred to a sub-committee, which will report on any doubtful article on the basis of actual demand as shown by statistics or other information.

ADDITIONS TO THE FORMULARY.

Your Committee agrees with the Chairman that the acceptance of formulas for any new preparation should be based upon consideration of merit in the article, of demand for the same, and upon the reliability of any formula, which may be offered. On the other hand, we must be equally careful to omit no meritorious preparations that conform to these requirements. The Formulary may also include and give suitable definitions for all articles that serve as ingredients for preparations described therein and for which no standard of quality and identification is given in the U. S. P., for which an authoritative standard may fail to be adequate for a correct recognition, either as to kind or quality.

STATUS OF THE APPENDIX.

The Committee has given a careful consideration to this question. The present appendix is occupied solely with preparations which have been discarded from previous editions of the U. S. Pharmacopœia, and are not therefore any part of the work of the N. F. Committee, but as the status of the appendix is not well established, your Committee believes that the best way of meeting this condition is to eliminate the word "Appendix" and to divide the book into two parts, each part to contain such articles as may be appropriately placed therein.

PROPAGANDA.

Under this head, the Chairman presented an analysis of the work of pharmacists and the various Sections of the A. Ph. A. which we recommend be referred in its entirety to the Section on Commercial Interests.

EXPENSES OF THE COMMITTEE.

In the past, the work of the National Formulary Committee has been wholly gratuitous, but the present legal position of the Formulary makes the work of the Committee more onerous and responsible than it has been hitherto, and we think that the regular expenses of the Committee involving correspondence, use of materials for investigation and to carry on the work should be met by the Association. Such legitimate expenses may be defined more definitely later and are not likely to be of any large amount unless by special provision and agreement as in the present case.

GENERAL SUBJECTS.

Under this title, a number of details were considered affecting the title of the National Formulary, titles to preparations, etc.

We make the following recommendations:

1. That the title page of the National Formulary should omit the words "Of unofficial preparations," and the title should be simply "The National Formulary."

2. That the nomenclature and the titles of the N. F. should be in harmony with those of the U. S. P.

3. Titles and synonyms not official should conform to modern ideas of chemistry.

4. Synonyms or English titles should agree with the Latin titles.

5. N. F. titles should be descriptive of the true composition of the preparations.

6. The introduction of therapeutic or anatomical names in the future should be prohibited, and we recommend that present therapeutic titles be eliminated as far as is practicable.

7. The method of citing botanical sources and authorities should be made to conform to modern botanical nomenclature.

8. A record of publication should appear on the title page to the N. F.

10. Authority should be given to the Committee to establish a specific date on which the next edition of the National Formulary should go into effect.

11. The *Bulletin* should serve as the official organ of the Committee on National Formulary, and should promptly publish such matters as may be sent to it by the Chairman.

Our Chairman further presented a very complete report on the keeping qualities of N. F. preparations made according to the first edition of the book, and extending over a period of twenty years. This report is available for reference, is of much value, and in the opinion of the Committee should be published in the proceedings.

The final sessions of the Committee were devoted to a detailed consideration of each separate article in the Formulary. Wherever any change was suggested, either in title, in the formula, or in the directions for manipulation, the article was referred to its appropriate sub-committee for investigation.

This detailed consideration occupied four full sessions and no article in the Formulary was omitted from consideration. This work being unfinished, is not submitted in detail at this time.

SUMMARY OF ACTS AND RECOMMENDATIONS OF THE N. F. COMMITTEE.

1. The Committee to be appointed by the Council for a full period of revision.

2. The Committee to consist of fifteen members.

3. That the co-operation of the Medical profession and the Medical Departments of the National Government be secured.

4. That the present scope of the Formulary as indicated in the preface, be continued.

5. That conservative action and liberal interpretation be given to the consideration of suitable articles for the Formulary.

6. That the metric system only be used.

7. That strength of preparations be stated as so many grams in one hundred cubic centimeters.

8. That all formulas be uniform in style.

9. That a statement be inserted in the preface to the effect that the National Formulary does not assume any responsibility for the therapeutic value of any preparation, and that the question of additions or eliminations be decided mainly on the basis of commercial demands.

10. That suitable definitions for unofficial ingredients may be inserted.

11. That the term "Appendix" be eliminated and the book designated as parts one and two.

12. That the Chairman's résumé of the Propaganda be referred to the section on Commercial interests.

13. That the expenses of the Committee be reasonably provided for.

14. The book to be simply "The National Formulary."

15. That nomenclature titles and synonyms should be in conformity with the U. S. P. or with modern ideas should be descriptive of composition, and that therapeutic or anatomical titles should be discouraged. (G. S. 2, 3, 4, 5, and 6 and 7.)

16. Insert record of publication on the title page.

17. Trade mark names shall not be introduced.

18. The *Bulletin* should serve as the official organ of the N. F. Committee.

19. Authority should be given to the Committee to establish a specific date on which the next edition of the National Formulary should go into effect.

OIL OF ORANGE.

By Edwin Dowzard.

Two varieties of orange oil occur in commerce,—sweet and bitter; the former is the oil principally used, the latter being produced only to a limited extent. It is impossible to distinguish between the two, except by their odor and taste.

Wallach has shown (*Liebig's Annalen, 227*, p. 289) that orange oil consists of about 90 per cent. of d-limonene. A small quantity of citral and l-limonene appears to be present. According to Flatau and Labbé (*Bull. Soc. Chem., Paris,* (3) 19, 361) myristinic acid and myristicol are present in small quantities, besides traces of citronellol and a new aldehyde with a characteristic odor of oranges. The above chemists have also separated an ester which is in the form of an amorphous powder. Its melting point is 64° to 65° C. and it has a strong orange odor. The presence of the methyl ester of anthranilic acid in sweet orange oil was first detected by Parry (*Chemist and Druggist, 56*, p. 462), and afterwards confirmed by Schimmel & Co. (Report, April, 1900).

The following results were obtained in the examination of seventeen samples of sweet orange oil:

	Specific Gravity 15° C.	Rotation 20° C.	Rotation First 10% distillate 20° C.	Remarks
1	.849	+70° 44′	+66° 36′	Adulterated, probably lemon oil and turpentine
2	.850	+95° 15′	+97° 20′	Normal
3	.851	+95° 20′	+95° 40′	"
4	.849	+93° 10′	+95°	"
5	.850	+95° 20′	+98° 8′	"
6	.852	+92° 14′	+93° 40′	Rotation rather low; otherwise normal
7	.848	+95° 16′	+94° 30′	Normal
8	.849	+97° 24′	+97°	"
9	.855	+94°	+94° 50′	"
10	.852	+79° 50′	+73°	Adulterated, probably turpentine or lemon oil
11	.851	+85° 30′	+85° 48′	" "
12	.854	+89° 10′	+89° 44′	" "
13	.847	+96°	+95° 40′	Normal
14	.854	+95° 10′	+96° 30′	"

	Specific Gravity 15° C.	Rotation 20° C.	Rotation First 10% distillate 20° C.	Remarks
15	.847	+86° 50′	+87° 30′	Adulterated, probably turpentine, lemon oil or terpenes
16	.847	+96°	+98° 30′	Normal
17	.846	+92° 20′	+87°	Adulterated, probably lemon terpenes

Specific Gravity.—The following are the limits given by the various authorities for this constant:

Gildemeister & Hoffmann	.848 to .852 at 15° C.
Schimmel & Co.	.848 to .853 at 15° C.
Parry	.848 to .856 at 15° C.
U. S. P.	.842 to .846 at (25° C.)

The figure .856 is exceptional; from .848 to .853 covers most commercial samples of sweet orange oil.

The specific gravity of bitter orange oil varies between .854 and .857. The addition of lemon oil or turpentine raises the specific gravity slightly, alcohol lowers it.

Rotation.—The following are the variations for this constant:

Gildemeister & Hoffmann ...	+96° to +98° (20° C.)
Schimmel & Co.	+95° to +98° (20° C.)
Parry	+94° to +98° 20° C.
U. S. P. Not less than.....	+95° at 25° C.

The rotation of bitter orange oil varies from +90° to +93° at 20° C. Schimmel & Co. (Report, April, 1895) have shown that the rotation of orange oil varies greatly with changes in temperature.

	Variations for each degree of temperature.
Between 10° and 20° C.	14.5
Between 20° and 30° C.	13.2

It is customary to report the rotation of orange oil at 20° C. It is not, however, necessary to determine the rotation at this temperature, as by using the above corrections the constant may be determined at any temperature between 10° and 30° C.

Owing to the high rotatory power of orange oil, sophistications such as turpentine and lemon oil are easily detected. In doubtful cases the oil should be distilled and the rotation of the first 10 per

cent. of the distillate determined. The rotation should be not at all or only slightly lower than that of the original oil. Ogston & Moore (*Chem. and Drug., 60* (1902), p. 155) state that the distillate from pure oil has a rotation of at least 1° above that of the original oil; if the increase in rotation be less, or below that of the original oil, there must be a strong suspicion that the oil has been adulterated with lemon oil or terpenes of lemon oil.

Adulterants.—The common adulterants of orange oil are: turpentine, lemon oil, terpenes of lemon and orange oils and alcohol. All lower the rotation except orange oil terpenes. Alcohol may be detected by shaking a known volume of the sample with water, the alcohol is removed by the water which of course is increased in volume. Resin has been used as an adulterant and may be detected by a residue determination. The residue on evaporation of pure oil is from 2 to 4 per cent.

The U. S. P. gives a test for turpentine by the formation of pinene nitrosochloride, but the observation of the rotation of the original oil and that of the first fraction of 10 per cent. obtained on distillation is quite sufficient for the detection of turpentine.

The constants for pure sweet orange oil are as follows:

Specific gravity, 15° C.	.848 to .853
Rotation (20° C.)	+95° to +98°

Rotation of first 10 per cent. of distillate should not be lower than that of the original oil.

ANALYTICAL DEPARTMENT,
PARKE DAVIS & CO.

AMERICAN PHARMACEUTICAL ASSOCIATION.

FIFTY-SIXTH ANNUAL MEETING.

The fifty-sixth annual meeting of the American Pharmaceutical Association, held at Hot Springs, Arkansas, September 7–12, was one of the most important and successful in the history of the Association. The week was almost entirely devoted by those in attendance to sincere and earnest work tending to the development of the science and art of pharmacy and the upbuilding and realization of a greater American Pharmaceutical Association. From the open-

ing meeting until the close of the sessions it was apparent in the discussions that while there might be differences of opinion, yet every one was loyal to the Association and had the true interests of pharmacy at heart. The result was effective work in the sections and general sessions, which must in a measure give an impetus to the work of the branches this winter.

First General Session.—The opening session was held at the Eastman Hotel on the Government Promenade on Monday, September 7th, at 3 P.M., with the President, W. M. Searby of San Francisco in the chair. An address of welcome in behalf of the officials and citizens of Hot Springs was made by Hon. William H. Martin in the absence of Mayor Jodd. Frank Schachleiter, President of the Arkansas Pharmaceutical Association followed with an address of welcome on behalf of the pharmacists of Hot Springs. These addresses were responded to on behalf of the Association by Prof. H. P. Hynson and Prof. C. S. N. Hallberg. At this time Miss Mary A. Fein, Secretary of the Arkansas Association of Pharmacists presented the President with a bouquet of 56 roses, emblematic of the number of years of existence of the A. Ph. A. These were received in a most happy speech of appreciation by President Searby and we could not help but feel that it was this incident and the impromptu address of the President that did much to make the meeting pleasant as well as profitable.

Other addresses were made as follows: Alrick Hammar spoke on behalf of the pharmacists of the United States Navy; Albert M. Roehrig responded on behalf of the Public Health and Marine Hospital Service; Lyman F. Kebler brought the greetings from the Bureau of Chemistry of the U. S. Department of Agriculture; F. M. Apple represented the National Association of Retail Druggists; and W. L. Dewoody made a felicitous address on behalf of the National Association of Wholesale Druggists.

Telegrams with greetings were received from the members of the Association residing in Cuba and in the Philippine Islands. These were acknowledged by telegrams. As the Treasurer, S. A. D. Sheppard was unable to be present, owing to illness, a telegram was sent him expressing the sympathy of the members of the Association. Professor Caspari read a letter in which he stated that Mr. Sheppard had sent a check for one thousand dollars to be added to the Endowment Fund of the Association. A letter from the Honorary President Philip C. Candidus was read stating his

inability to be present and expressing his hearty wishes for a successful meeting.

Professor Oldberg, first Vice-president was called to the chair and the President proceeded to read his address which was an able and forceful essay devoted to the consideration of the following subjects: reorganization, membership, local branches; membership in proportion to population; status of pharmacists; prerequisite laws; profession, trade, ethics; commercial pharmacy; patent medicines and fads; pharmacists and physicians; manufacturing pharmacists; pharmacists in the government service; legislation affecting pharmacists; the *Bulletin;* and the endowment fund.

In conclusion President Searby said:

"The American Pharmaceutical Association has reason to celebrate its fifty-sixth anniversary in a cheery mood, because it has made substantial advances during the past year. Its membership roll is higher than ever before, and gives promise of further growth. Its activities have been greater, benefiting a larger number, as its local branches have brought the pharmacists of new localities more immediately within the sphere of its influence. This beneficent work is in its infancy, for the number of these branches is sure to increase. The cause of pharmacy is to be congratulated in the fact that the desire to obtain better drugs and pharmaceuticals is well-nigh universal in this great land, and that the Pure Drug Laws, now so numerous, are but the enactment into legal statutes of the long-cherished desire that gave birth to this Association. Again, the success of the "get together" movement wherever it has been seriously tried, encourages the belief that pharmacists and physicians have passed their apogee, and that the perigee of mutual co-operation for mutual good is coming, let us hope, with a comet-like swiftness. And while physicians are breaking away from prescribing proprietaries, druggists are also manifesting a more healthy sentiment on the subject of patent medicines. One movement helps the other. It is true that in certain parts of the West and Middle West some druggists do still permit displays of nostrums in their store windows thereby giving tacit endorsement to questionable remedies. Yet the tendency is to discourage their sale and to encourage sane medication under medical advice. Shorter hours of business in drug-stores, and especially on Sundays, are being adopted in many towns, and the movement will surely grow. These steps towards ethical

and social improvement, together with the general endorsement of the "tell-the-truth" policy in regard to labels and advertisements, operating concurrently with the general advance in educational requirements by colleges and boards of pharmacy, and with the increase of prerequisite state laws—these things are all conducing to an elevation of the status of the pharmacist, and will in due time tend to his securing better compensation."

"So as I close this address, I ask you to turn your faces toward the rising sun; feast your eyes on visions of a brighter day, towards which we are all working, as we seek to promote true pharmacy by education, by legislation, and by steady, persistent efforts to develop a scientific, practical and ethical pharmacy."

Second General Session.—The meeting was called to order by President Searby and after the reading of the minutes of the first session by Secretary Caspari and of the Council by the secretary, Prof. Whelpley the Committee on Nominations reported through the Chairman, Harry B. Mason. The following members were nominated and subsequently elected to the respective offices: President, Oscar Oldberg; Vice-presidents, E. G. Eberle, William Mittelbach and James H. Beal; Members of council, Henry P. Hynson, S. A. D. Sheppard, W. M. Searby and F. W. Meissnêr. According to the new by-laws the officers of the Association for 1909–10 will be elected by ballot through the mail and the Committee reported the following nominations: For President, E. G. Eberle, H. H. Rusby, and A. B. Stevens; for first Vice-president, C. B. Lowe, F. B. Lillie and Frank B. Schachleiter; for second Vice-president, Charles W. Johnson, Francis B. Hays and Murray G. Motter; for third Vice-president, E. V. Howell, W. B. Day and John B. Bond. For members of council, George M. Beringer, Oscar Oldberg, Albert M. Roehrig, Charles E. Caspari, Joseph W. England, Frederick W. R. Perry, William Mittelbach, William L. Dewoody and Harry B. Mason.

The Council recommended the nomination of S. A. D. Sheppard for Honorary President. The nomination was approved and Mr. Sheppard was accordingly elected honorary president. The report of the Treasurer was read by the Secretary, Professor Caspari. In it was shown that the "net cash balance July 1, 1908 exceeded that of July 1, 1907 by $1835.45, and the increase in value of the Funds, during the year, was $3065.42, making a total of $4900.87."

The total value of the several funds, viz.: Ebert Fund, Centennial Fund, Life Membership Fund and Endowment Fund amounts to $21,670.47. After the report was adopted Professor Remington offered resolutions testifying to the appreciation of the members of the arduous labors of Mr. Sheppard, who for 22 years has acted as Treasurer of the Association and who through illness was unable to attend this meeting. The resolutions were signed by all the members present and subsequently forwarded Mr. Sheppard.

Professor Caspari read the report of the financial accounts in the care of the General Secretary. In the report of the Committee on Publication prepared by Professor Caspari it was stated: "that the demand for the new edition of the National Formulary continues, but not as actively as last year; and that it became necessary to print another issue of 5000 copies of the book during the past year, making a total of 29,000 copies to date. The total expense to date of publishing, advertising and delivering the 3rd edition of the National Formulary amounts to $9699.06."

The most important report presented at the session was that of the Committee on National Formulary which was read by W. L. Scoville and which will be found on p. 465 of this JOURNAL.

Reports from the following were also received: Committee on National and State Legislation, Oscar Oldberg, Chairman; Committee on President's Address, Joseph W. England, Chairman; Reporter on Progress of Pharmacy, C. Lewis Diehl; Committee on the Bulletin, H. P. Hynson, Chairman; Committee on Status of Pharmacists in the Army, Navy and Public Health and Marine Hospital Service of the United States, George F. Payne.

The following resolution on the appointment of a committee on standards of non-official drugs and chemical products was offered by Professor J. H. Beal and after some discussion adopted:

Resolved:

1. There shall be a standing committee of the Council to be known as the Committee on Standards of Non-official Drugs and Chemical Products, consisting of fifteen members elected by the Council, but the members of such Committee need not be members of the Council.

2. The first Committee shall be constituted as follows: two representatives from firms engaged in the manufacture of pharmaceuti-

cals, two representatives from firms engaged in the wholesaling of drugs and chemicals, five retail druggists and four representatives from the faculties of colleges of pharmacy.

3. The Committee shall prepare from existing sources of information, a tentative list, subject to revision, correction and extension by this Association, of the principal drugs, chemicals and medicinal preparations not recognized by the United States Pharmacopœia, with a suitable system of nomenclature for the same, and shall adopt suitable limits of strength and purity therefor.

4. The chairman of said Committee shall be designated by the Council and the Committee shall report progress annually.

5. The Committee first chosen shall serve for one year, and at the next annual meeting of the Council shall report upon a plan for the permanent organization of the Committee, and also upon a plan for the permanent continuance of the work.

Third General Session.—On Friday evening an extra general session was held which was mainly devoted to a discussion on the time and place of next meeting. As there was a strong desire on the part of the members to arrange to hold a meeting simultaneously with the National Association of Retail Druggists it was decided to leave the matter in the hands of the Council with power to act.

At this session it was reported that 265 new members had been elected during the past year. A resolution was passed suspending the by-laws during the meeting next year so as to allow additional time for the Section on Scientific Papers. This Committee will probably arrange for seven continuous sessions, allowing ample time for the reading of papers and discussions thereon.

The greetings of the American Medical Association were presented through Dr. C. Travis Drennen, former President of the Arkansas Medical Association. Dr. J. C. Miner of the Hot Springs Medical Society also spoke for the local Medical Society. Professor Remington responded for the American Pharmaceutical Association. The report of the Committee on United States Pharmacopœia of the Association was read by Professor Hallberg. The Committee on the William Procter, Jr. Monument Fund presented a report through the Chairman, Dr. John F. Hancock. The following officers for the ensuing year were appointed by the Council: General Secretary, Charles Caspari, Jr.; Reporter on the Progress of Pharmacy, C. Lewis Diehl; Treasurer, Henry M. Whelpley.

Final General Session.—The last general session was held on Saturday morning. The minutes of the new Council showed the election of the following officers: Joseph P. Remington, Chairman, and Joseph W. England, Secretary. A number of reports of Committees were received and resolutions referred to the general sessions from the sections were adopted. The most important work of the meeting was the adoption of all the resolutions offered by the Committee on National Formulary and the discussion on the re-organization of the Association. While no active steps have been taken to re-organize the work of the Association it is not unlikely but that steps will be taken in the near future to concentrate the work, and shorten the time of the meetings. After the installation of the new officers President Oldberg declared the fifty-sixth meeting of the Association adjourned *sine die.*

SECTION ON SCIENTIFIC PAPERS.

This Section held two sessions on Thursday. The Chairman of the Section, Professor Virgil Coblentz, was unable to be present on account of trouble with his eyes and his address on "Our Pharmacopœial Rubrics" was read by the Secretary, Chas. E. Vanderkleed, who also acted as chairman of the Section. The Ebert Prize was awarded to A. B. Stevens and L. E. Warren for their paper, on "Poison Sumac" (Proc. 1907, p. 423; AMER. JOUR. PHARM., 1907, p. 499). The report of the Committee on Drug Market was read by Lyman F. Kebler. The following officers were elected for the ensuing year: Chairman, Charles E. Vanderkleed; Secretary, M. I. Wilbert; Associate, Albert H. Clark. The following are abstracts of some of the papers which were presented:

CRUDE AND POWDERED DRUGS AT THE PORT OF NEW YORK DURING THE YEAR 1907–08.

By H. H. Rusby.

"Doubtless the most important part of the year's results is the demonstration that much of the adulteration of drugs is intentional and studied, and is a business proposition purely." The findings of Dr. Rusby will be published in a later issue of this JOURNAL.

On the Crystalline Alkaloid of Calycanthus Glaucus.

By H. M. Gordin.

This is a continuation of the work by the author. From another lot of seeds although extracted in a similar manner to that by which he obtained the alkaloid calycanthine (Proc. 1904, p. 345; 1905, p. 224) he now obtains a different alkaloid, to which he has given the name isocalycanthine, and which he considers to be isomeric with the previously isolated alkaloid calycanthine.

Air-dried isocalycanthine melts at 212–14°. It is easily soluble in acetone and pyridine, more difficultly in ether, almost insoluble in benzene, and insoluble in petroleum ether. A saturated solution in alcohol, prepared by shaking excess of finely powdered isocalycanthine with alcohol in a mechanical shaker for eight hours, contained 1.4 grams in 100 Cc. A saturated solution in water, prepared by the same method at the same temperature, contained 1 part in about 6000 parts of solution. In both cases the residues left after evaporating the solvent were not dried to constant weight, but kept at 80° for three hours and then in desiccator for one hour. The saturated aqueous solution of isocalycanthine gives no turbidity with Mayer's reagent unless acid be present; with Wagner's reagent turbidity appears even in absence of acid.

On prolonged exposure to the air, isocalycanthine becomes yellowish. The color reactions so far examined seem to be identical for both alkaloids. An attempt to determine the molecular weight of isocalycanthine by titration with standard hydrochloric acid, using hematoxylin as indicator, gave unsatisfactory results, the end reaction being very unsharp. Other indicators were not tried.

Following is a report on the crystallography of isocalycanthine by Dr. E. H. Krauss:

"The crystals of isocalycanthine which were subjected to a crystallographic examination were obtained by slow crystallization at room temperature from a solution in hot alcohol. They are rather small, the largest being about 2 mm. in length. The crystals are clear, colorless and transparent, and possess high refractive power. For the most part the crystals are well developed, the faces being bright and affording excellent images.

From the angular measurements of the crystals and the form and position of the etch figures on the basal pinacoid, the crystals must be referred to the orthorhombic bisphenoidal class.

Some of the Distinguishing Morphological Characters of Belladonna and Scopolia.

By Henry Kraemer.

This paper appears on p. 459 of this Journal.

The Estimation of Phenol.

By W. A. Puckner and A. H. Clark.

The experiments here described were undertaken with a view of evolving a satisfactory method for the isolation and estimation of phenol in pharmaceutical products, such as tablets, powders, etc., when other substances which interfere with a direct estimation are present.

Most of the experiments were made on tablets containing bismuth, opium, aromatic powder, and phenol or on mixtures containing these substances in known proportions. As a means of isolating phenol, distillation first suggested itself. Some of the substance was placed in a distilling flask, water added, the liquid rendered acid, and then distilled nearly to dryness. The phenol in the distillate was determined by the bromine absorption method of the U. S. P. Results in this way were not quite satisfactory, as it was thought impossible to distill all the phenol and keep the volume of the distillate within such limits as would permit an accurate estimation of the phenol present therein.

Extracting the powdered substance with ether, removing the phenol from the ether solution by shaking with a solution of potassium hydroxide and determining the phenol in this liquid gave results which were uniformly high when applied to mixtures of known composition. This was found to be due to the use of ether, and the method accordingly abandoned.

Extracting the powdered substance with water either by percolation or by maceration, and after standing some time removing an aliquot portion of the clear supernatant fluid, and in this aqueous solution determining phenol, was tried. The results again were high; this and also the difficulty in filtration, uncertainty in measurements, etc., lead to the abandonment of this method.

Extraction after the manner outlined above for ether, substituting chloroform for the ether, gave results which were very uniform, and on mixtures of known compositions were entirely

satisfactory. Thus in a prepared mixture containing 7.14 per cent. of crystallized phenol, assaying 96 per cent. by the U. S. P. method, 7.00 per cent., 7.01 per cent., 6.9 per cent., 7.09 per cent. and 7.15 per cent. of the phenol was found.

In trying to confirm the results obtained by extraction with chloroform an entirely different method was suggested, namely, that of distillation in a current of steam. Results obtained by this method at first seemed to agree with and to confirm the accuracy of the chloroform extraction method, but it was soon found that on some of the tablets results considerably higher were obtained, while on the other hand two specimens gave results much lower. In some of these experiments the distillate assumed a yellow color, the tribromphenol did not separate well, and in the final titration the end point was not sharp.

The authors after careful investigation found the cause of these untoward results and have obtained satisfactory results with the following method: The substance containing the phenol was placed in a round-bottomed distilling flask and water sufficient to cover it was added. The flask was connected by means of a double perforated rubber stopper, on the one hand, with a Liebig condenser, and on the other with a tin reservoir containing water. A current of carbon dioxide was then passed from a Kipp generator through the reservoir and distilling flask for fifteen minutes or more. (In the case of the known mixtures of phenol and potassium hydroxide V. S., phenolphthalein was added and carbon dioxide passed until colorless, about five minutes being sufficient.) The water was then heated to boiling and the distillation continued, a brisk current of carbon dioxide * passing through the apparatus continually until 250 Cc.† of distillate was obtained. Of this distillate

* Simple saturation with carbon dioxide will not liberate all the phenol, but a stream of the gas must be passed during the distillation; when in an experiment the supply of carbon dioxide was cut off as soon as the saturation was complete, and then the distillation continued, only 88.64 per cent. of the phenol was recovered in one case, 90.48 per cent. in another, and 86.68 per cent. in a third.

† If 250 Cc. of distillate is collected, as shown in an experiment with pure phenol, the first 100 Cc. of distillate in one case contained 96.48 per cent. of the phenol taken and in another 97.22 per cent.; with a mixture of phenol, opium, bismuth subnitrate, and aromatic powder, and containing 7.21 per cent. phenol, the first 100 Cc. distillate contained 98.61 per cent. of the phenol present.

50 Cc. was taken and placed in a 250-Cc. glass-stoppered flask, 25 Cc. of standard bromine solution added, and the mixture acidulated with 5 Cc. hydrochloric acid U. S. P.; the mixture was shaken frequently during one-half hour, and then 5 Cc. potassium iodide T. S. was quickly introduced and the mixture well shaken. The stopper and neck of the flask were rinsed with water, a small amount of chloroform added, and the iodine titrated with standard sodium thiosulphate V. S.

The following conclusions are drawn from these experiments: First. The method of the U. S. P. for the valuation of phenol is entirely satisfactory, and also may be applied when the volume of the phenol solution is as great as 50 Cc. and the amount of phenol present sufficient to absorb from 10 to 90 per cent. of the bromine solution added. Second. Phenol can be completely removed from a solution containing much potassium hydroxide by first saturating with carbon dioxide and then distilling with steam in a current of carbon dioxide. Third. Under these conditions as much as .150 Gm. phenol is found in the first 100 Cc. distillate. Fourth. The presence of such bodies as sulphites, bromates, and nitrates does not affect the estimation of phenol by this method.

Solution of Chlorinated Soda.

By H. V. Arny and O. H. Dawson.

This was a critique of the process of manufacture of this product as given by U. S. P. VIII, showing that solutions prepared by this process, yielded respectively, 2.01, 1.65 per cent. and 1.65 per cent. available Chlorine, despite the fact that the amount of chlorinated lime used was increased to represent the pharmacopœial content (30 per cent.). A report of experiments with modifications of the process of the Pharmacopœia of 1880, by which the chlorinated lime paste is mixed with sodium carbonate solution and filtrate collected was given. In three experiments, 12 Gm. chlorinated lime (26.7 per cent.) and 6.5 Gm. monohydrated sodium carbonate were used, the difference in methods being in the amount of water employed and consequently the amount of filtrate obtained; the quantities of filtrate being 25 c.c., 43 c.c. and 90 c.c. respectively. In the fourth experiment, a tenfold recipe was used and 900 c.c. filtrate collected. The four finished solutions assayed respectively 3.05 per cent., 2.50 per cent., 2.67 per cent., and 2.85 per cent. available Chlorine.

The authors stated that in view of our food and drug laws, state and national, the instability of chlorinated lime and of solution of chlorinated soda, is a menace to every dispenser of these two compounds. It is useless for the retailer to comfort himself with the assurance that no food official would prosecute the seller of these unstable products, nor is it wise to dismiss the subject with the short answer that Labarraque's solution is rarely called for. The fact still remains that 30 per cent. chlorinated lime, and 2.4 per cent. Labarraque's solution are official; that these strengths are practically never possessed by the chemicals dispensed by the retailer; and that unless other strengths are distinctly stated on the label, it is understood that the products are of pharmacopœial strength.

To the writers the only apparent way out of the dilemma, as far as chlorinated lime is concerned, will be the reduction of the official strength of that chemical to 25 per cent. at the next pharmacopœial revision; and as for solution of chlorinated soda, it should be freshly prepared by the pharmacist, and that by a modified recipe, such as suggested in this paper and from chlorinated lime of unimpeachable quality.

In this connection the writers suggest to those wholesalers who specialize in chlorinated lime, the advisability of dispensing same in 12 Gm. lots in sealed glass tubes, similar to those used for amyl nitrite. By having the tube long enough, it should be possible to use the heat necessary to seal the tube without unduly heating the chemical and this device may prevent loss by volatilization. That the chemical deteriorates even when sealed with paraffin in cork or glass-stoppered bottles, the data found in this article clearly show.

The quantity, 12 Gm. of chlorinated lime, is suggested as affording a convenient basis for making up 100 cubic centimeters of Labarraque's Solution by the modified recipe suggested in this paper.

Proteid Compounds of Heavy Metals.

By H. A. B. Dunning.

The paper consisted of a collection of notes on the preparation of compounds of albumen and peptonized albumen with iron, mercury, silver and copper. Referring to the iron compounds, various methods were used to produce them. The object of the experimental work was to devise satisfactory processes for the production of

soluble compounds. To accomplish this, various chemical substances —sodium hydroxide, sodium citrate, ammonium citrate and magnesium citrate—were employed to promote solution.

Oil of Sandalwood.

By A. R. L. Dohme and H. Engelhardt.

This was a reply to papers by E. J. Parry and Schimmel & Co. on the value of optical rotation as a test of purity. The authors have controverted the arguments of these two authors and offered, besides their own experience, the experience and results of two other large distillers of this oil, in favor of reducing the optical rotation of the U. S. P. on sandal oil. The authors maintained that assay of santalol, the active principle, solubility in 70 per cent. alcohol, and specific gravity are ample to define a pure oil, but saw no objection to including the acid and saponification numbers to recognize adulterations. If optical rotation must be included, they insist that it should be lowered to $-12°$ as a minimum requirement, so as to avoid ruling out much of the oil now distilled, perfectly pure, and meeting all requirements.

Purity of Some Official and Non-Official Drugs and Chemicals.

By A. R. L. Dohme and H. Engelhardt.

An examination of about 10,000 drugs and chemicals was made and a report was given of those that did not measure up to requirements. The results showed a marked improvement in quality of goods examined since the passage of the Pure Food and Drugs Act. Among the drugs not usually attaining standard requirements were mentioned asafœtida, ergot, hyoscyamus, jalap, croton oil, oils of eucalyptus, bitter orange, and savin. A strong recommendation was again made for incorporating in the U. S. P., 1910, a "Chloroform pro narcosi" as very few if any on the market meet the requirements of such a product. A digestive strength test for papain was suggested to be made official. Resin scammony made from the roots of scammony or orizaba root was suggested to be made official, as the virgin scammony was found to be practically off the market. Saffron should be returned to the U. S. P., as it is used considerably and is frequently adulterated.

Notes on the Estimation of Hydrastine.

By Frank R. Eldred and C. M. Pence.

Data were given relative to the purity of the hydrastine obtained in assaying golden seal by different methods. The estimation of hydrastine in glycerin solutions was also considered.

A Note on the Separation of Emulsions for Analysis.

By Frank R. Eldred and W. C. Bartholomew.

The authors stated that practically all emulsions may be separated by alcohol in such a manner that the oils, emulsifying agents, and other ingredients can be accurately determined and examined. Results illustrating the accuracy of the method were given.

A Further Study of the Alkaloids of Gelsemium.

By L. E. Sayre.

This was a brief review of former work, upon the constituents of the drug, by the author. A review of Thompson's work on gelsemine and gelseminine was given, and further progress in the investigation of these two alkaloids of Thompson, by employing 40 pounds of the drug from which the alkaloids were extracted and the resulting principles examined was reported. Physiological tests were made of the products. A process for the assay of gelsemium preparations was also suggested.

The author says that Havenhill's gravimetric process gives results which are entirely too high on account of adherent coloring matter, but that the Webster general process for alkaloids which is given in the American Journal of Pharmacy for July, 1907, and applied by him (see Proceedings Amer. Pharm. Ass'n, 1907, p. 356) is decidedly the most favorable process for alkaloidal gelsemium estimation. Care has to be used in shaking out the alkaloid that no emulsion occurs. This can be obviated by avoiding vigorous shaking during the process. The great advantage of the Webster process is that the final solution for titration is apparently free from coloring matter. It has only a slight fluorescence and makes an ideal solution for titration. As an indicator Mr. Webster prefers a solution of iodeosin in water saturated with ether, the neutral point being determined by noting the color of the mixture on agitating. His results were obtained by using cochineal as indicator.

The Superiority of Artificial Mineral Waters.

By Enno Sander.

The author gave the origin of mineral waters. He stated that Meteoric water penetrates the earth's crust and returning to the surface loaded with materials, creates healing springs, and that they are beneficial only at their source. They have no uniformity of composition at different times, and are easily decomposed by various causes. They cannot be bottled or transported. It was stated that Dr. F. A. Struve constructs apparatus for preparing artificial waters of same composition as the natural but without their disposition to degeneration, and that scientists of all countries indorse the invention. On the other hand opposition had been active but vain. The author said that there is necessity for pure materials and stated artificial waters have many merits.

The Detection of Phenol and Cresotic Acids in Salicylic Acid and its Derivatives.

By H. Engelhardt and H. W. Jones.

The Carletti reaction for the detection of phenol in salicylic acid by the use of a 2 per cent. alcoholic solution of furfurol was applied to a number of samples of salicylic acid and its derivatives. The investigation was extended to discover whether this reaction is also applicable to cresotic acids which are formed during the process of manufacture of salicylic acid. The authors found that the cresotic acids give the same color-test as phenol with Carletti's reaction, the sensitiveness being even greater than with phenol. Of eighty samples of salicylic acids and derivatives, only 60 per cent. were found free from contamination.

Notes on Syrup of Hypophosphites and Syrup of Calcium Lactophosphate.

By H. W. Jones.

The results were given of a study of the progressive inversion taking place in the above named U. S. P. syrups. These results, presented in the form of curves, showed the rate and extent of this inversion in Syrup of Hypophosphites, U. S. P., and Syrup of Calcium Lactophosphate, U. S. P., and in experimental syrups containing varying amounts of either mineral or organic acids. It

was found that all the cane sugar of Syrup of Calcium Lactophosphate, U. S. P., was inverted, under ordinary conditions, within twenty weeks, while 19 per cent. of that contained in Syrup of Hypophosphites, U. S. P., is inverted in the same time.

The Desirability of More Elaborate Pharmacopœial Standards.

By L. D. Havenhill.

The author claimed that the primary aim of the U. S. P. is to provide the physician with an armament of drugs and medicines of standard quality. He stated that the gradual replacing of the crude drugs by crushed and powdered ones, as well as the increased demand for them and the attendant variation in quality, makes it desirable to have more elaborate official descriptions and standards for the latter. In the light of our present knowledge of the quality of crude drugs, pharmacists cannot hope to prepare preparations of satisfactory uniformity without standards for color, ash, and extractive, as well as for the recognized active constituents.

Deterioration of Hydrocyanic Acid.

By Virgil Coblentz and Otto B. May.

The deterioration of this acid, prepared from potassium ferrocyanide and also silver cyanide, was studied under various conditions with the following results: Diffused light plays no important part in the decomposition. The employment of 50 per cent. alcohol as a medium serves as an excellent preservative, as well as the employment of a 1 per mille solution of acetanilide or acidification with an inorganic acid. Prussic acid is best preserved in paraffined bottles where every contact with glass is avoided, the loss amounting to about 6 per cent. in nine months. Decomposition is brought about through the presence of alkali cyanides, especially ammonium cyanide.

Quantity of Arsenic in Bismuth Salts and Testing Same for Arsenic.

By Virgil Coblentz and Otto B. May.

The authors advise against the use of nitric acid in the ignition of the various organic salts of bismuth previous to testing for arsenic, owing to the difficulty encountered in removing the last traces of nitrate from the ash.

This ash, when boiled with a solution of potassa and filtered, to remove the bismuth, gives up its nitrate which, when acidified and introduced into a Marsh-Berzelius or any form of apparatus based on the generation of arsine gas, causes the decomposition of the latter. Simple ignition of bismuth salts does not cause any loss in arsenic content. Quantitative estimations of the arsenic content of twenty-five samples of commercial bismuth salts were made, among which there were six free and two with barest traces of arsenic, while the remaining contained from 0.05 to 0.2 parts of arsenous oxide per 100,000.

The Acetic Acid Fluid Extracts of the U. S. P., VIII.

By Joseph Feil.

These preparations keep well, but lose acidity on standing, the loss varying for each fluid extract. Their odor improves. It is thought that a large number of this class of galenicals would find extensive use in veterinary practice. It is suggested that a veterinary surgeon would be a valuable addition to the Revision Committee of the next Pharmacopœia, as druggists are finding an increased demand for medicines intended for domestic animals. It is further suggested that a similar line of argument could be applied to the dental profession and a D.D.S. be made a member.

Interference of Sodium Bicarbonate in the Testing of Pancreatin.

By C. E. Vanderkleed and L. H. Bernegau.

Although pancreatin is supposedly most active in alkaline solution, the presence of sodium bicarbonate seriously interferes with its amylolytic action, as shown in the assay of Compound Pancreatic Powder, N. F., and other mixtures of pancreatin and sodium bicarbonate, unless the latter be first neutralized with acid.

Section on Pharmaceutical Education and Legislation.

This section held three sessions on Wednesday with J. W. England, Chairman and Charles H. La Wall, Secretary, both present. The address of the Chairman was devoted to the work of the section and among other things stated, " that, at the present time, there is no real need for 90 schools of pharmacy in this country.

One-half this number could do the work better than it is done. Few of the schools have received endowments, although some received a part of the state appropriations made to state universities. Hence, if the smaller schools would combine, their facilities for instruction would be increased, their instructors would be better paid and the general conditions of pharmaceutical education would be distinctly improved."

The Secretary presented a report which contained considerable statistical information in regard to the curricula and number of students of the colleges and schools of pharmacy, the work of the Boards of Pharmacy and the reports on the new and proposed legislation in the various states. The Chairman, Jos. W. England and the Secretary, C. H. La Wall were re-elected as officers of the section for the ensuing year. The following are the associates: Cornelius Osseward, Julius A. Koch and Leo R. A. Suppan. The following are the abstracts of some of the papers which were presented:

Importations of Opium, Coca and their Chief Alkaloids.

By Henry P. Hynson.

The author has compiled figures on the amount of these drugs which has been imported from 1903 to 1907 inclusive. The figures do not show that the active legislation and punitive campaign of the last five years would cure the abuse of these drugs. There seems to be great need for the adoption of other means than those already tried to prevent and counteract the growing evil. While the reputable importers and manufacturers of alkaloids have stated that they believe the sale of these drugs especially cocaine has decreased, the government figures flatly deny such a condition and plainly suggest the probability of the existence of dishonorable and secretive sources of supply, not known to honorable members of our profession.

Professor Hallberg offered the following resolution which received the approval of the Association: As the importation of coca and its alkaloids can be controlled only through the custom's service, every importation should be registered at the Port of Entry and the Treasury Department or other department of the Federal government should keep an account of the sale and distribution of the same and report where it goes.

Pharmacy Facing a Crisis.

By Harry B. Mason.

In an exhaustive paper the author considered: (*a*) the scope and success of the temperance movement; (*b*) the secret of its strength and permanence; (*c*) the danger to pharmacy; (*d*) the remedies; and (*e*) legislative measures. The whole sum and substance of Mr. Mason's paper was a plea that pharmacists should realize the danger which confronts them understand that it points to the necessity of prompt and vigorous measures, that it is clearly their duty to take absolute control of the situation as it affects their own calling, and that only by such methods can they avoid public disgrace and dishonor besmirching the entire profession and dragging its standards in the dust.

The following resolution was passed and received the endorsement of the Association at the general session on Saturday:

Whereas, a great tidal wave of temperance legislation and reform is sweeping over our own and several foreign lands, and nearly half the entire population of the United States, occupying two-thirds of the geographical area of the country, has already outlawed the saloon in no uncertain manner; and

Whereas, a small minority of druggists are taking illegal and dishonorable advantage of the situation to do a general business in the sale of liquor, while non-druggists, seizing upon the opportunity, are employing registered men, opening nominal drug stores, and really conducting saloons under the protecting cloak of pharmacy; and

Whereas, this condition of things presents pharmacy with a grave and threatening danger, is already bringing odium and calumny upon the whole profession, and calls for prompt and courageous measures if we are to save the honor and integrity of the calling; therefore be it

Resolved, by the members of the American Pharmaceutical Association, that we discountenance the sale of liquor in drug stores for other than legitimate medicinal purposes; that any pharmacist or pseudo-pharmacist who strives to take advantage of temperance legislation for personal profit is a disgrace to the profession and should be ostracized by it; and that as members of an upright and conscientious calling we should ourselves undertake the discovery and punishment of those within our ranks who bring us all into dishonor. Be it further

Resolved, that we call upon the city, county and state pharmaceutical associations throughout the "dry" sections of the country to co-operate with the local authorities, prove the intention of the drug trade to respect the law, show its determination to tolerate no liquor evils, and assist in exposing and penalizing those druggists who abuse their privileges and who thus drag the name of Pharmacy into the mire of infamy and degradation.

The Food and Drug Act as an Educator.

By L. F. Kebler.

The author referred to the beneficial influences of the Food and Drugs Act of June 30, 1906. The discrepancies in the U. S. Pharmacopœia and National Formulary have to some extent been reviewed and in many cases adjusted. A revision of the labels has been made in connection with food and drug products so as to conform to the requirements of the law. Advertisements have been carefully gone over so that they do not contain statements which are misleading. He also called attention to the fact that during the past two years there has been a marked dearth in chemists properly qualified. Of the 1400 applicants for the position of inspector who took the examination only about 14 received a marking of 70 per cent.

The Committee of One Hundred and the American Health League.

By M. I. Wilbert.

The author showed the origin and nature of the public health movement in the United States and that both political parties are committed to the establishment of a National Bureau of Health. A resolution was offered and subsequently approved by the Association at the general session that the Association was in accord with the work of the Committee of One Hundred and the American Health League.

Commercial Training as a Factor in the Teaching of Pharmacy.

By Joseph P. Remington.

The author contends that commercial training is as important as any other department of instruction when planned so as to give what is necessary for the pharmacist, and to exclude the vast amount of training suited to other kinds of business.

Commercial Training Applied to Laboratory Work.

By H. V. Arny.

The author considered the practical application of the fundamental principles of commerce to the Laboratory Course devoted to the manufacture of standard chemical preparations.

Ingredients for some 16 chemical preparations—such as Solution of Soda, Solution of Ferric Sulphate, etc.—are collected in sets and, at beginning of Course, are supplied to students, who prepare the necessary commercial paper—such as orders, day receipts and bills—and who finally furnish promissory note covering invoice.

Preparations are made, are assayed as per U. S. P. by Senior students, reports of analyses furnished the individual manufacturing student, along with an estimated percentage value of each product. Bills are prepared by the individual student, based on market and quality value of each product and are paid by checks which are deposited, thus giving ideas of banking. At end of Course, the bank accounts are checked up, outstanding notes for original goods are taken up and the bank balance of each student is used as one of the factors in his grading. With each step of the Course, the particular business detail is explained in a short address.

The Teaching of Pharmacognosy.

By Henry Kraemer.

Pharmacognosy is a comparatively new branch of botanical science and is still in a state of evolution. Its value heretofore has not been well understood, but with the progress that is being made it is coming to be better appreciated.

In view of the problems that confront us and that are constantly arising, the aim in the study of pharmacognosy first should be the attainment of a definite and working knowledge of the macroscopic and microscopic characters of the drugs rather than a general knowledge of them. In other words, the student of pharmacognosy should be taught how to identify vegetable and animal drugs in the crude, comminuted or powdered condition, to determine their quality, and to prevent their deterioration. The following general principles should be borne in mind in the teaching of this branch.

1. It is necessary that the student acquire not only a good

general knowledge of botany, but that he be especially grounded in structural botany, including external morphology and internal morphology, or histology, and also that he be instructed in obtaining a practical or working knowledge of systematic botany.

2. The training in connection with the use of the microscope, including the application of reagents, is only second in importance to that of the study of the plant material itself, because it is a means to an end. For, if the technique is not well understood, the results are likely to be misinterpreted and in some cases more harm than good done.

3. As individual collections of authentic drug specimens are not only useful to the student for purposes of study during his college course, but also for purposes of comparison subsequently, it is highly desirable that each student be encouraged to make such collections. In connection with the course of instruction in the Philadelphia College of Pharmacy, the students are given specimens of all of the official drugs and some of the important non-official drugs, and they are expected to put the collection in a permanent form, and are rated upon the care taken with the specimens and their knowledge of them and ability to identify them. Some years ago one of the students suggested the use of type trays, such as are used by printers, and which are covered with glass, for keeping the specimens, and this method of keeping them has become rather popular, for the reason that the tray with its compartments, is compact, inexpensive and attractive.

4. While the student can not be expected to become familiar with all of the plants that yield vegetable drugs, it is highly essential that he acquire a knowledge of as many of the living medicinal plants as possible, as a knowledge of the habits and characters of the plants from which drugs are derived is often helpful in judging of the quality and characters of the drugs themselves, and is also of importance in the collecting of authentic material for purposes of study and comparison. A botanic garden should be connected with every college of pharmacy, and botanic excursions should be conducted in conjunction with the course of instruction.

5. With the advances in preliminary educational requirements for students of pharmacy, the most serious handicap to the development of the courses in pharmacognosy, lies in the shortness of the courses in the schools and colleges of pharmacy. The time devoted to laboratory instruction in pharmacognosy is by no means

adequate. The number of hours for the entire course should be at least two hundred, and the number should be increased to four hundred as soon as practicable.

Pharmacopœial Nomenclature.

By Henry M. Whelpley.

The author stated that the pharmacopœial nomenclature is ignored by many of the manufacturers and jobbers and recognized in only a half-hearted way in the price-lists, while many of the sets of examination questions issued by boards of pharmacy indicate gross carelessness in nomenclature. A motion was offered that the Association request the manufacturers, the jobbers, the publishers of price-lists and the boards of pharmacy to adopt the pharmacopœial nomenclature. This resolution was adopted by the Association at the general session on Saturday.

Harmful Effects of Our Pharmacy Laws.

By William F. Kammerer.

The author contends that our pharmacy laws have not benefited the retail pharmacist but have done real harm because that section of the law which was intended to prevent a drug store from being left in charge of an unregistered clerk during the temporary absence of the responsible head, is not enforced and on account of the character of the Board of Pharmacy examinations and the manner in which they have been conducted.

The Value of Pharmaceutical Advisory Boards to State Boards of Health.

By L. E. Sayre.

The author suggests that the proper thing for the pharmacists to contend for is a fair, just and proper representation upon the Board of Health, such a representation as is obtained in the State of Kansas, for example.

We suggest as a general resolution that: *"The State Boards of Pharmacy in those States having food and drug laws analogous to the national law, the State Boards of Pharmacy be requested to offer their services to the State Board of Health as an 'Advisory Board' in pharmaceutical matters."*

The pharmacists in Kansas thus far have been most generously represented in this way, and they are likely to have more, as

fairness and justice may demand. This representation is to be brought about by the harmonious action of the Board of Health and the pharmacists of the state. We contend that this is the most wholesome kind of reform when reform is needed, a reform that is brought about by harmonious action rather than contention. In Kansas the Board of Health has attached to it as far as possible an advisory board representing the different professions and commercial interests. When any matters come up that seriously affect the pharmacist, a committee composed of representative pharmacists is called in for consultation, and a pharmacist is a member of the Advisory Board.

The Next Step—A Practical Plan for the Professional Advancement of Pharmacists.

By George H. Meeker.

The author proposes a plan based upon the coöperation of the American Pharmaceutical Association and the American Medical Association in examining and certifying clinical chemists; in establishing the official laboratory standards; in adopting a special code of ethics; in educating the public; and in demanding from national, state and local governments the recognition of the principle that physicians and pharmacists contribute the intelligent public opinion regarding the purity and wholesomeness of foods and drugs.

The plan is as follows:

1. Let the A. Ph. A. appoint a special committee and invite the A. M. A. to appoint a similar committee.

2. Let these two committees combine and organize.

3. Let the combined committees take steps to bring about finally the following state of affairs:

A. A national central examining board representing the A. Ph. A. and the A. M. A. will conduct examinations of applicants who desire to obtain the title of "Certified Clinical Chemist" together with the privileges accruing from the same. These examinations will be uniform, will be conducted simultaneously by various local committees and will be modeled after the U. S. Civil Service examinations.

B. The examinations will be based upon the "Official Clinical Laboratory Methods"; will be both theoretic and practical; will be rigid, searching and impartial; and will require a high proficiency, say 90 per cent., for success.

D. The successful applicant will be entitled, conformably with the "Official Code of Ethics," to make himself known to the public and profession as a "Certified Clinical Chemist" (or by some other suitable title).

E. The "Official Clinical Laboratory Methods" will have been formulated and adopted by authority of the A. Ph. A. and the A. M. A.

F. The "Official Clinical Laboratory Methods" will be subject to criticism and periodic revision and amplification through the automatic operation of an officially prescribed procedure for this purpose.

G. There will be special sections upon clinical laboratory methods at the annual meetings of the A. Ph. A. and the A. M. A.

H. Special attention will be paid in the "Bulletin" of the American Pharmaceutical Association and the "Journal" of the American Medical Association to this new movement.

I. There will be a joint standing committee of the A. Ph. A. and the A. M. A. to take special charge of a propaganda of education of the medical, pharmaceutic and lay public—that the physician may feel it his duty systematically to employ the certified clinical chemist; that the pharmacist may equip himself and his pharmacy for clinical laboratory work; and that the lay public may become alive to the necessity of laboratory information in the diagnosis, prognosis and treatment of disease.

J. The A. Ph. A. and the A. M. A. and the various state pharmaceutic and medical societies will have, by concerted efforts, completed such arrangements with the national and state governments, that properly certified druggists will be employed in caring for a portion of the colossal volume of detail laboratory work of food and drug inspection, etc., demanded by an efficient enforcement of the multitude of public health laws for the control of foods, drugs, hygiene and sanitation.

Legal Requirement for Licensure Determines the Standard of Pharmaceutical Education.

By John T. McGill.

The author considers the relative value of drug store experience and laboratory work at college and expresses the opinion that while the former may be helpful from a commercial point of view it

might not be so from the legal point of view, *i.e.*, if the student did not gain a laboratory knowledge of substances he is unqualified when it comes to a test.

National and State Legislation.

By Oscar Oldberg.

This was a voluminous report prepared by the Committee on National and State Legislation of the Association which it is hoped will be printed later in the *Bulletin* of the A. Ph. A. and be placed in the hands of every retail pharmacist in the United States.

Section on Practical Pharmacy and Dispensing.

Two sessions of this section were held with the Chairman, Franklin M. Apple and the Secretary, W. L. Scoville present. The address of the Chairman was in part devoted to a review of the work of the section during the ten years of its existence. Referring to the recommendation contained in the address of the chairman of this committee of last year to the effect that closer relationships should exist between the several committees of this Association, particularly so those of the Scientific Section and this Section, he said:

"This post-graduate course in pharmacy should be conducted with perfect system and order, thereby increasing its effectiveness many fold, and making it more attractive to those students who are anxious to keep abreast of the times and prove themselves creditable votaries of their calling in life.

"The physicians are awakening to a full realization of the manifold advantages of adhering closely to the U. S. P. and N. F. preparations as their armamentarium in the treatment of disease, and they are demanding more thorough courses of instruction in the colleges of medicine upon the U. S. P. and N. F. preparations, which will prepare the future physicians to pass more critical judgment upon those preparations; hence a far greater responsibility devolves upon the dispensing pharmacists, who must look for their future education, in matters practical, largely to this Association."

The following officers were elected for the ensuing year: Chairman, Leonard A. Seltzer; Secretary, E. Fullerton Cook; Associate, Otto Raubenheimer.

Following are abstracts of some of the papers presented:

Syrupus Scillæ Compositus.

By William Mittelbach.

In the official directions for making this syrup, it is stated: "Strain the syrup, and add water enough through the strainer to make the required amount." The author suggests that by reversing the finishing steps in the procedure, adding the requisite amount of water for the quantity wanted, and then straining, he has found that the process is shortened, and believes a more stable syrup is obtained. The little loss of sugar hanging to the strainer does not materially affect the preparation, and none of the foam and other inert matter hanging to the strainer is washed into the syrup. Several of the other official syrups are improved likewise, if manipulated in this way.

The Syrups of the U. S. P. (8th Rev.).

By E. Fullerton Cook.

The official Syrups were prepared in the quantity prescribed in the Pharmacopœia, with great care, and the directions therein followed minutely. It has been the purpose of the writer to critically examine the details of the processes and suggest improvements wherever possible, and also report upon the keeping quality of the Syrups during a period covering one year, with samples kept under different conditions.

Unguentum Aquæ Rosæ.

By Val. Schmidt.

The author has obtained excellent results with the following formula: White wax, spermaceti (of each 5½ ounces); Russian mineral oil, pure white (30 ounces, troy); distilled water (12 fluid ounces); pure borax (2½ drachms); otto rose (30 drops).

Melt the wax and spermaceti over a slow fire in a large porcelain evaporating dish; tare, and weigh the oil into it; then apply a gentle heat until clear. Dissolve the borax in the distilled water, previously heated to 150° F.; allow the wax, spermaceti and oil to cool to about the same temperature; add the solution of borax *all at once* and stir briskly for a few minutes, then add the otto of roses, continuing the stirring until cool.

Bismuthi Hydroxidum.

By Otto Raubenheimer.

The author proposed a better title and an improved formula for Bismuthi Oxidum Hydratum N. F., and gave practical experiments and stœchiometric calculations.

Notes and Suggestions on Some Official Cerates and Ointments.

By J. M. Good.

Observations were made on the following: Resin Cerate, Chrysarobin Ointment, Diachylon Ointment, Mercuric Nitrate Ointment, Yellow Mercuric Oxide Ointment, Ammoniated Mercury Ointment, Tar Ointment, Zinc Oxide Ointment, Manipulation of Ointments in Prescription Work.

Compound Solution of Phosphate of Soda, U. S. P.

By H. G. Posey.

The author gives the results of experiments to overcome the tendency of this preparation to deposit crystals; also to avoid the growth of fungi therein. He recommends that the quantity of citric acid be increased to 260 Gm., and that solution of both the salts and the acid be affected by aid of a water bath instead of continued trituration in a mortar, as directed by the Pharmacopœia, and that the resultant product be filtered while yet hot, thereby producing a beautiful, clear liquid, which will compare favorably with the many sodium phosphate solutions now on the market, and will be a credit instead of a discredit to our Pharmacopœia.

Fluidglycerates.

By George M. Beringer.

The author suggests a new class of liquid galenicals—1 c.c. to represent 1 Gm. of the drug with glycerin replacing alcohol as a solvent. A general formula with method of manipulation in manufacturing these products is given together with the results of experimentation upon a number of drugs, the results being confirmed by assays of the finished products.

Some Dosage Forms of Medicines.

By M. I. Wilbert.

The author considers the available methods for the administration of medicines; forms in which medicines may be administered; the need for adopting the dosage form to the condition and the idiosyncrasies of the patient; the origin of some of the existing forms of medicines and the need for elaborating and increasing this variety; and some dosage forms that should be developed and could readily be exploited by the dispensing pharmacist.

A Method of Preparing Lime Water That Insures Conformity With the U. S. P. Requirements.

By W. L. Cliffe.

The method proposed consists in slaking the lime as directed by the Pharmacopœia and washing the resultant calcium hydroxide by decantation. The washed calcium hydroxide is then made into a creamy magma with water and placed in an ounce bottle which is securely corked.

To prepare Lime Water (U. S. P.) take one ounce bottle of the Magma of Calcium Hydroxide and one gallon of cold water.

This method if adopted would obviate any possibility of dispensing a Lime Water below the standard of the U. S. P., as each ounce bottle contains more than enough to thoroughly saturate a gallon of cold water and repeated examinations have shown a wide margin of safety. The ounce bottles can be re-used indefinitely.

Some Interesting Prescriptions.

By H. A. B. Dunning.

The author exhibited a collection of twelve copies of prescriptions recently filled in a retail drug store. These were selected from a large number because of interesting features observed while compounding, or where special treatment was required to produce a more desirable finished preparation. They were exhibited for general discussion without any suggestions by the collector as to how they should be compounded.

Elixir Diethylbarbituric Acid (Veronal).

By W. C. Kirchgessner.

Diethylbarbituric acid, 18 Gm.; Compound tincture of vanillin (N. F.), 16 c.c.; Alcohol, 175 c.c.; Glycerin, a sufficient quantity to make 500 c.c. Dissolve the diethylbarbituric acid in the alcohol, add the compound tincture of vanillin, and enough glycerin to make 500 c.c.

Solution of Iron, Manganese and Pepsin.

By W. C. Kirchgessner.

Iron and ammonium citrate, 30 Gm.; Manganese sulphate, 3 Gm.; Glycerole of pepsin (1–10), 30 c.c.; Alcohol, 100 c.c.; Simple syrup, 100 c.c.; Tincture of orange, 4 c.c.; Tincture of vanilla, 4 c.c.; Aromatic fluidextract, 2 c.c.; Acetic ether, 0.5 c.c.; Ammonia water, a sufficient quantity; Distilled water, a sufficient quantity to make 1000 c.c.

Dissolve the iron and ammonium citrate, and the manganese sulphate in 500 c.c. of distilled water, add the glycerole of pepsin and a sufficient quantity of ammonia water to neutralize the solution, making a clear solution. Mix the alcohol, simple syrup, tincture of orange, tincture of vanilla, aromatic fluidextract and acetic ether. Add to the above solution, then add a sufficient quantity of distilled water to make 1000 c.c. Filter if necessary.

Elixir Hexamethylenamine Compound.

By W. C. Kirchgessner.

Saw palmetto berries, granulated, 125 Gm.; Corn silk, ground, 125 Gm.; Sandalwood, ground, 31.25 Gm.; Hexamethylenamine, 41 Gm.; Simple syrup, 125 c.c.; Compound spirits of orange (U. S. P.), 10 c.c.; Alcohol; Distilled water, of each, a sufficient quantity to make 500 c.c.

Mix the drugs and moisten them with 8 fluidounces of a mixture of alcohol 1 part, and water 2 parts, and allow to macerate for 48 hours. Pack into a percolator; then add enough menstruum of the same proportions as aforementioned to make 360 c.c. of percolate. In this dissolve the hexamethylenamine, then add the compound spirits of orange and simple syrup. Filter if necessary.

Pharmacy's Unexplored Field.

By Jos. Weinstein.

The author states that great possibilities await pharmacists in the field of bacteriology, whereby they can prove acceptable co-workers with the physicians and demonstrate thier abilities as scientific men.

The Evolution of "Unofficial Formulæ."

By C. Lewis Diehl.

The object of this paper is to point out the slender material upon which the earlier efforts to secure uniformity in preparations of the same name were based; to trace the evolution of the earlier collection of formulas to the magnificent collection now available to pharmacists; to reconcile the younger members of our profession with conditions of imperfections which were probably far more difficult to correct in the past than they are at the present time.

Construction of Official Preparations.

By H. C. Blair.

The claim was made that as the U. S. P. is intended to serve as a formula book for pharmacists and not simply a book of standards for manufacturers, it should contain formulas that are simple, plain and as exact as possible, with a consideration for expedition and expense. The paper was illustrated with samples and improved formulas were offered.

Notes on Some Official Iodine Solutions.

By F. W. Nitardy.

The following modified formula was presented as representing an improvement over the present official formula for tincture of iodine: Iodine, 70 Gm.; Potassium iodide, 50 Gm.; Water, 35 c.c.; Alcohol, a sufficient quantity to make 1000 c.c. Introduce the iodine, potassium iodide and water into a graduated flask or bottle, shake until completely dissolved, and add sufficient alcohol to make the finished tincture measure 1000 c.c.

As alcohol is not the active constituent of this preparation, its value is in no way reduced by the introduction of 3½ per cent. of water; while the saving of time is considerable since only a

few minutes are required for the preparation of tincture of iodine by this method.

In several official preparations containing iodine, potassium iodide and water, the potassium iodide solution used as a solvent for the iodine is made entirely too dilute. Considerable time and work can be saved by modifying the working directions of these preparations to the extent of making a concentrated solution of the potassium iodide, dissolving the iodine in this solution and then adding the remaining water.

Formulas Recommended for Introduction into the N. F.

By F. W. Nitardy.

Glyceritum hydrastinæ compositum. (Compound glycerite of hydrastine or "colorless hydrastis"): Hydrastine hydrochloride, 5.00 Gm.; Aluminium chloride, 5.00 Gm.; Dilute hydrochloric acid, 1.50 c.c.; Glycerin, 500.00 c.c.; Distilled water, a sufficient quantity to make 1000.00 c.c. Dissolve the salts in 100 c.c. of distilled water, add the dilute hydrochloric acid, and mix this solution with the glycerin. Then add a sufficient quantity of distilled water to make the product measure 1000 c.c.

Petrolatum saponatum iodatum. ("Iodized liquid petrox"): Iodine, 10 Gm.; Liquid saponated petrolatum N. F., a sufficient quantity to make 100 c.c. Mix them and dissolve by occasional shaking.

Linimentum Ammoniæ.

By Otto Raubenheimer.

The author gave the advantages of an Ammonia Liniment, prepared by shaking together Oleum Sesami and Aqua Ammoniæ, over the U. S. P. formula and directions for preparing the same, and the results of extensive experiments with a large number of oils.

A Plea for Real Pharmacy.

By Wm. Mittelbach.

The author remonstrated against the tendency to increase the number of compound preparations to be called to the attention of the medical men. An appeal for greater simplicity in medication was made suggesting that the physicians indicate which combinations of drugs are most desirable, by writing original formulas for the same in the form of individual prescriptions.

THE OPPORTUNITY OF THE HOSPITAL PHARMACIST IN ADVANCING THE U. S. P. AND N. F. PROPAGANDA.

By J. T. Harbold.

The author showed the great possibilities open to the hospital pharmacists in advancing the propaganda efforts in behalf of the U. S. P. and N. F. by taking advantage of the intimate relationships that exist in those institutions between the internes and the pharmacists.

SOME CHEMICAL REASONS WHY SOLUTIONS DETERIORATE.

By Frederick E. Niece.

The author called attention to the causes for many solutions deteriorating from chemical changes, together with recommendations how to overcome the same.

NOTES ON SEVERAL NEW ELIXIRS.

By Franklin M. Apple.

Attention has been called, by some writers, to the similarity of flavor of the official elixirs; also to the high alcoholic strength of the U. S. P. aromatic elixir, which has been the cause for severe condemnation thereof, hence it has been the author's aim to originate several elixirs as follows:

Elixir dulcis, or elixir aromaticum. (Sweet elixir, or aromatic elixir): Anethol, 12 minims.; Oil of coriander, 1½ minims.; Oil of myristica, 2 minims.; Tincture of vanilla (U. S. P.), 1 fluidrachm.; Alcohol, 6½ fluidounces.; Simple syrup and Distilled water, of each a sufficient quantity to make 32 fluidounces; Purified talc, 1 ounce.

Elixir aurantii florum compositum. (Compound elixir of orange flowers.): Oil of cinnamon (U. S. P.), 6 minims.; Alcohol and Stronger orange-flower water, of each, 6 fluidounces; Simple syrup, 12 fluidounces, Distilled water, 8 fluidounces; Purified talc, 1 ounce.

Whereas the American Medical Association has condemned the compound digestive elixir N. F., and suggested that it be expunged from the list of official preparations; also, inasmuch as many medical practitioners have stated that they have prescribed various proprietary products, as vehicles, owing to their beautiful red color and aromatic taste, there can be no question that an elixir

meeting the demands of these practitioners should be made official. The following product will meet the demands of the most exacting physicians:

Elixir dulcis rubrum, or elixir aromaticum rubrum. (Red sweet elixir, or red aromatic elixir.) Tincture of cudbear (N. F.), 6 fluidrachms; Compound tincture of cudbear (N. F.), 2 fluidrachms; Sweet elixir, a sufficient quantity to make 16 fluidounces. Mix. Allow to stand for 48 hours, if possible, and filter. This preparation has a rich, ruby-red color, and is neutral in reaction—a distinction from compound digestive elixir. The author called attention to the fact that when tincture of cudbear N. F. and compound tincture of cudbear N. F. are mixed in the above proportions, a very beautiful red color results upon dilution thereof—one free from the purplish tint of the dilutions of tincture of cudbear N. F.; also free from the brownish tint of the dilutions of compound tincture of cudbear N. F.

Section on Commercial Interests.

This section held sessions on Tuesday and Thursday afternoons. Owing to the absence of the chairman, Jacob Diner the section was called to order by A. V. Pease. In the absence of the Secretary, G. O. Young, this position was filled by Harry B. Mason. The address of the Chairman was read, a number of papers were presented and ten questions were discussed by various members. The following officers were elected: Chairman, Harry B. Mason; Erich H. Ladish, Secretary; Associates: P. Henry Utech, Arthur L. Cheney and Waldo M. Bowman.

The following are abstracts of some of the papers which were presented:

Commercialism in Drugs.

By Lyman F. Kebler.

The term "commercial" as used in the past in connection with certain commodities meant either manipulated or adulterated goods or articles of doubtful quality. Of the arguments used by certain dealers, brokers, and importers justifying transactions in inferior, adulterated and manipulated goods the following were discussed by the author: (*a*) There would not be enough of the pure material to supply the demand. (*b*) The price of pure goods would be so much enhanced as to prohibit their sale. (*c*) Full strength products

would not satisfy the tastes of many consumers. (*d*) Certain goods are not used directly, but are employed in the manufacture of other preparations. (*e*) Articles of standard quality would be detrimental to the welfare of the public.

A large majority of manufacturers, dealers and importers, are desirous of having the law enforced so as to establish honest competition and eliminate fraud and adulteration of all forms. They are not looking for the assistance of shrewd and cunning lawyers to devise ways and means for manufacturing, importing or shipping into interstate commerce adulterated and misnamed drug products.

H. K.

[*To be continued.*]

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS.—The tenth annual convention of the National Association of Retail Druggists was held in Atlantic City, New Jersey, September 14–18. The meeting was characterized by an earnestness and enthusiasm that did credit to the delegates that represented the retail druggists of the United States. The address of the President, Thos. H. Potts was "an inspiring document and enthusiastically received by the delegates." The following officers were elected for the ensuing year: President, W. S. Elkin, Jr.; Vice-presidents: H. B. Guilford, A. O. Zwick, C. Coonley; Secretary, Thomas H. Potts; Treasurer, John Coleman; Executive Committee: Charles Renner, F. F. Ernst, Edward Williams, Charles F. Mann, Geo. W. McDuff and E. H. Ladish.

THE WOMEN'S ORGANIZATION OF THE N. A. R. D. held a successful meeting at Atlantic City at the time of the N. A. R. D. convention. The address of the President, Mrs. Leslie O. Wallace was highly appreciated and both Mrs. Wallace and Mrs. Adelaide M. Godding were the recipients of silver gifts presented in appreciation of their work as founders of the W. O. N. A. R. D. The following officers were elected: President, Mrs. William Estell Lee; Vice-presidents: Mrs. Adelaide M. Godding, Mrs. A. O. Zwick, Mrs. W. D. Aufderheide; Miss B. Arete Johnson; Mrs. R. G. Rutherford; Secretary, Mrs. Joseph F. Forbrich; Treasurer, Mrs. A. M. Richardson, Executive Committee: Mrs. Leslie O. Wallace, Mrs. Otto Groenland, Mrs. Isaac Light, Mrs. Louis Emanuel, Mrs. J. F. Finneran, Mrs. Eliot Johnson, Mrs. Charles Fuhrman and Mrs. W. D. Streeter.